IN THE CLAIMS:

Please cancel claims 1-10.

Please add the following new claims:

- 11. (Previously Amended) A method of exposing a resist on a substrate comprising the steps of:
 - a) providing the substrate with a film of resist;
 - b) placing the substrate on a stage; and
 - c) sensing the position of the substrate with a displacement sensor, wherein said displacement sensor comprises a differential variable reluctance transducer (DVRT).
- 12. (Previously added) The method as recited in claim 11, wherein the substrate comprises a wafer.
- 13. (Previously added) The method as recited in claim 12, wherein said wafer comprises a semiconductor.
- 14. (Previously added) The method as recited in claim 11, wherein the method further comprises the step of exposing said resist with radiation.
- 15. (Previously added) The method as recited in claim 14, wherein said radiation has a wavelength to provide a structure having a dimension less than 100nm.
- 16. (Previously added) The method as recited in claim 15, wherein said radiation comprises x-ray.

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- 17. (Previously added) The method as recited in claim 16, wherein said x-ray radiation is collimated.
- 18. (Previously added) The method as recited in claim 16, wherein said x-ray radiation is concentrated.
- 19. (Previously added) The method as recited in claim 14, further comprising the step of providing a mask for defining exposure of said resist.
- 20. (Previously added) The method as recited in claim 19, wherein said mask is spaced from said substrate by a gap, said method further comprising the step of moving said stage to adjust said gap.
- 21. (Previously added) The method as recited in claim 19, further comprising the step of using output of said displacement sensor to control said exposing step.
- 22. (Previously Amended) The method as recited in claim 21, wherein said mask is positioned with respect to said substrate, said method further comprising the step of exposing said resist at a time when said displacement sensor output indicates that position of said mask with respect to said substrate is optimum.
- 23. (Previously added) The method as recited in claim 22, wherein said mask is spaced from said substrate by a gap, said method further comprising the step of exposing said resist at a time when said displacement sensor output indicates that said gap is optimum.
- 24. (Previously Amended) The method as recited in claim 19, further comprising the step of using said displacement sensor output to control mask to wafer misalignment.

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- 25. (Previously Amended) The method as recited in claim 11, further comprising the step of using said displacement sensor output to control substrate x, y, z, rotation, and magnification.
- 26. (Canceled)
- (Previously added) A system for exposing a substrate comprising a stepper and an X ray source, vibration insulation there between.

28 to 36 (Canceled)

- 37. (Currently amended) A method of exposing a resist on a substrate comprising the steps of:
 - a) providing the substrate with a film of resist;
 - b) placing the substrate on a stage;
 - c) providing x-ray radiation from a point source;
 - d) using an inline collimator or concentrator to collimate or concentrate collimating or concentrating said x-ray radiation;
 - e) providing a mask for defining exposure of said resist;
 - f) illuminating said mask with said x-ray radiation after said collimating or concentrating step (d); and
 - g) exposing said resist with x-ray radiation passing through said mask.
- 38. (Previously added) The method as recited in claim 37, wherein said x-ray radiation has a wavelength to provide a structure having a dimension less than 100nm.
- 39. (Canceled)
- 40. (Previously added) The method as recited in claim 37, wherein the substrate comprises a wafer.

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- 41. (Previously added) The method as recited in claim 40, wherein said wafer comprises a semiconductor.
- 42. (Previously added) The method as recited in claim 37, wherein said mask is spaced from said substrate by a gap, said method further comprising the step of moving said stage to adjust said gap.
- 43. (Previously added) The method as recited in claim 37, further comprising the step of sensing the position of the substrate with a displacement sensor.

- 44. (Currently amended) A method of exposing a resist on a substrate comprising the steps of:
 - a) providing the substrate with a film of resist;
 - b) placing the substrate on a stage:
 - c) providing x-ray radiation from a point source;
 - d) collimating or concentrating said x-ray radiation;
 - e) providing a mask for defining exposure of said resist;
 - <u>f)</u> <u>illuminating said mask with said x-ray radiation after said</u> collimating or conceptrating step (d):
 - g) exposing said resist with x-ray radiation passing through said mask; and
 - <u>h)</u> sensing position of the substrate with a displacement sensor. The method as recited in claim 43, wherein said displacement sensor comprises a differential variable reluctance transducer (DVRT).
- 45. (Previously amended) The method as recited in claim 43, further comprising the step of using output of said displacement sensor to control said exposing step.

- 46. (Previously amended) The method as recited in claim 45, wherein said mask is positioned with respect to said substrate, said method further comprising the step of exposing said resist at a time when said displacement sensor output indicates that position of said mask with respect to said substrate is optimum.
- 47. (Previously amended) The method as recited in claim 45, wherein said mask is spaced from said substrate by a gap, said method further comprising the step of exposing said resist at a time when said displacement sensor output indicates that said gap is optimum.
- 48. (Previously amended) The method as recited in claim 43, further comprising the step of using displacement sensor output to control mask to wafer misalignment.
- 49. (Previously amended) The method as recited in claim 43, further comprising the step of using displacement sensor output to control substrate x, y, z, rotation, and magnification.
- 50. (Previously amended) The method as recited in claim 37, wherein said x-ray radiation passes through a beam transport chamber having helium or other low attenuation gas at atmospheric pressure or at lower pressure.
- 51. (New) The method as recited in claim 43, wherein said displacement sensor comprises a differential variable reluctance transducer (DVRT).
- 52. (New) The method as recited in claim 44, further comprising the step of using output of said DVRT to control said exposing step.

- 53. (New) The method as recited in claim 52, wherein said mask is positioned with respect to said substrate, said method further comprising the step of exposing said resist at a time when DVRT output indicates that position of said mask with respect to said substrate is optimum.
- 54. (New) The method as recited in claim 52, wherein said mask is spaced from said substrate by a gap, said method further comprising the step of exposing said resist at a time when DVRT output indicates that said gap is optimum.
- 55. (New) The method as recited in claim 44, further comprising the step of using DVRT output to control mask to wafer misalignment.
- 56. (New) The method as recited in claim 44, further comprising the step of using DVRT output to control substrate x, y, z, rotation, and magnification.